

LAB GUIDE

Lab: App Modernization

Pre-requisites

- Microsoft Azure Account: You'll need a valid and active Azure account for the Azure labs.

Length

30 minutes

Exercise 1: Migrate the database to Azure SQL Database

###Task 1: Provision a SQL Server In this task, you will create a SQL Server (logical server). You will not create the databases at this time since it will be created during the database migration step

1. In a web browser, navigate to the Azure portal <http://portal.azure.com> and sign in with the credentials provided.
2. Select "+Create a resource", enter SQL Server into the Search the Marketplace box, press enter and select SQL Server (logical server) from the results.

Everything ✦ □ ⋮
















✕

Pricing
All ▾

Operating System
All ▾

Publisher
All ▾

Results

NAME	PUBLISHER	CATEGORY
 SQL Server 2016 SP1 Enterprise on Windows Server 2016	Microsoft	Compute
 SQL server (logical server)	Microsoft	Databases
 SQL Server Module	Microsoft	Databases
 ScaleArc for SQL Server	ScaleArc	Compute
 SQL Server AlwaysOn Cluster	Microsoft	Compute
 MS SQL Server Integration Services to Alation	Information Asset	Storage
 DgSecure for SQL Server	Dataguise	Compute
 SQL Server 2016 SP2 Std w/ VulnerabilityAssessment	Cognosys Inc.	Compute
 Free SQL Server License: SQL Server 2019 Developer on Red Hat Enterprise Linux 7.4	Microsoft	Databases
 ScaleArc for SQL Server (pay-go)	ScaleArc	Compute
 SQL Server 2014 SP3 Enterprise on Windows Server 2012 R2	Microsoft	Databases
 SQL Server 2017 Ent w/ Vulnerability Assessment	Cognosys Inc.	Compute
 SQL Server 2014 SP3 Standard on Windows Server 2012 R2	Microsoft	Databases
 SQL Server 2017 Web with Vulnerability Assessment	Cognosys Inc.	Compute
 SQL Server 2016 SP1 Ent w/ VulnerabilityAssessment	Cognosys Inc.	Compute

3. Select Create on the SQL server (logical server) blade

4. On the SQL Server (logical server on...) blade, specify the following configuration:

- a. Server name: Enter a unique value, such as SQLTESTXXX Where you must change the values for XXX, (ensure the green checkmark appears).
- b. Server admin login: demouser
- c. Password: Password.1!!
- d. Resource group: Select the module-01-XXXXX resource group, Where XXXXX is the number assigned to your credentials.
- e. Location: Select the nearest location to where you are.

Home > New > Marketplace > Everything > SQL server (logical server) > SQL Server (logical server only)

SQL Server (logical server ...)

* Server name
sqltest777 ✓
.database.windows.net

* Server admin login
Enter user name

* Password

* Confirm password

* Subscription
Pase para Azure: patrocinio

* Resource group
Select existing...
Create new

* Location
East US

☒ Allow Azure services to access server ⓘ

Advanced Data Security ⓘ
Start FREE Trial Not now

FREE trial period of 30 days, and then 289.5 MXN/server/month.
[Learn more](#)

5. Select Create.

###Task 2: Configure SQL Server firewall In this task, you will create a firewall rule to allow access to your SQL Server

1. After the SQL Server finishes provisioning, navigate to it by select Resource groups from the left-hand menu in the Azure portal, then click on module-01-XXXXX resource group from the list.

Home > Resource groups

Resource groups
MS Azure Labs

+ Add Edit columns Refresh Assign tags Export to CSV

Subscriptions: Azure Labs G-06

Filter by name... All locations All tags

4 items

NAME	SUBSCRIPTION	LOCATION
module-01-55401	Azure Labs G-06	West US
module-02-55401	Azure Labs G-06	West US
module-03-55401	Azure Labs G-06	West US
module-04-55401	Azure Labs G-06	West US

2. Select your SQL Server from the resources in the group.

module-01-55401
Resource group

Subscription (change): [Azure Labs G-06](#) Deployments: 1 Succeeded

Subscription ID: 8c29ac08-a7b9-4bd9-9e04-035c8922e73d

Tags (change): DeploymentId: 55401 TemplateId: 1707 LaunchId: 2889 LaunchType: ON_DEMAND_LAB

Filter by name... All types All locations No grouping

8 items ☐ Show hidden types

NAME	TYPE	LOCATION
<input type="checkbox"/> MyLabModule1-vnet	Virtual network	West US
<input type="checkbox"/> MySQLVM	Virtual machine	West US
<input type="checkbox"/> MySQLVM_disk2_cf587af7659c44f2854b43c070461867	Disk	West US
<input type="checkbox"/> MySQLVM_OsDisk_1_70547670138c49b08db38605a88c11df	Disk	West US
<input type="checkbox"/> MySQLVM-ip	Public IP address	West US
<input type="checkbox"/> mysqlvmnic	Network interface	West US
<input type="checkbox"/> MySQLVM-nsg	Network security group	West US
<input type="checkbox"/> sqltest888	SQL server	East US

3. On the SQL Server blade, select Firewalls and virtual networks under Settings.

Home > Resource groups > module-01-55401 > sqltest888

sqltest888
SQL server

+ New database + New pool + New data warehouse Import database Reset password Move Delete Feedback

Resource group (change): [module-01-55401](#) Server admin: demouser

Status: Available Firewalls and virtual net...: [Show firewall settings](#)

Location: East US Active Directory admin: Not configured

Subscription (change): [Azure Labs G-06](#)

Subscription ID: 8c29ac08-a7b9-4bd9-9e04-035c8922e73d

Tags (change): [Click here to add tags](#)

Notifications (0) Features (6)

All Security (4) Performance (1) Recovery (1)

Active Directory admin
Allows you to centrally manage identity and access to your Azure SQL databases.
NOT CONFIGURED

Advanced Data Security
Data Discovery & Classification, Vulnerability Assessment and Advanced Threat Protection.
NOT CONFIGURED

Automatic tuning
Monitors and tunes your database automatically to optimize performance.
NOT CONFIGURED

Auditing
Track database events and writes them to an audit log in Azure storage.
NOT CONFIGURED

Failover groups
Automatically manages replication, connectivity and failover for a set of databases.
NOT CONFIGURED

Transparent data encryption
Encryption at rest for your databases, backups, and logs.
SERVICE MANAGED KEY


Available resources


Filter by name All types


0 record


NAME	TYPE	STATUS	PRICING TIER
No resources found.			

4. On the Firewalls and virtual networks blade, specify a new rule named ALL, with START IP 0.0.0.0, and END IP 255.255.255.255, then select Save

 Save

 Discard

 Add client IP



Connections from the IPs specified below provides access to all the databases in sqltest777.

Allow access to Azure services


ON

OFF

Client IP address

177.228.15.240

RULE NAME	START IP	END IP
All ✓	0.0.0.0 ✓	255.255.255.255 ✓ ...



Connections from the VNET/Subnet specified below provides access to all databases in sqltest777.

Virtual networks

[+ Add existing virtual network](#)

[+ Create new virtual network](#)

RULE NAME	VIRTUAL NETW...	SUBNET	ADDRESS RAN...	ENDPOINT STA...	RESOURCE GROUP	SUBSCRIPTION	STATE
No vnet rules for this server.							

5. On the Success dialog box, select OK

###Task 3: Migrate the on-premises SQL database to Azure In this task, you will migrate the AdventureWorks database from on-premises (Lab VM) into Azure SQL Database

- 1. On Azure Portal, From the Left menu, go to Virtual Machines.

Microsoft Azure

Search resources, services, and docs

Create a resource

Home

Dashboard

All services

FAVORITES

All resources

Resource groups

App Services

Function Apps

SQL databases

Azure Cosmos DB

Virtual machines

Load balancers

Storage accounts

Virtual networks

Azure Active Directory

Monitor

Advisor

Security Center

Cost Management + Billing

Help + support

Azure services [See all \(+100\) >](#)

Virtual machines

Storage accounts

App Services

SQL databases

Azure Database for PostgreSQL

Kubernetes services

Function Apps

Azure Databricks

Cognitive Services

Make the most out of Azure

Learn Azure with free online courses by Microsoft

[Microsoft Learn >](#)

Monitor your apps and infrastructure

[Azure Monitor >](#)

Optimize performance, reliability, security, and costs

[Azure Advisor >](#)

Connect to Azure via an authenticated browser-based shell

[Cloud Shell >](#)

Recent resources [See all your recent resources >](#) [See all your resources >](#)

3. Click on MySQLVM

Home > Virtual machines

Virtual machines

Directorio predeterminado

+ Add ⌚ Reservations ≡ Edit columns ↺ Refresh | ⬢ Assign tags ▶ Start ... More

Subscriptions: Pase para Azure: patrocinio

Filter by name... All resource ... All types All locations All tags No grouping

1 items

<input type="checkbox"/>	NAME	TYPE	STATUS	RESOU...	LOCAT...	MAINT...	SUBSC...
<input type="checkbox"/>	MySQLVM	Virtual ma...	Running	MyLabM...	East US	-	Pase para... ⋮

4. On the VM's Dashboard, click on Connect from the upper menu.

Home > Virtual machines > MySQLVM

MySQLVM

Virtual machine

Search (Ctrl+/) << **Connect** ▶ Start ↺ Restart ■ Stop 📷 Capture 🗑 Delete ↺ Refresh

Overview

- Activity log
- Access control (IAM)
- Tags
- Diagnose and solve problems

Settings

- Networking
- Disks
- Size
- Security
- Extensions
- Continuous delivery (Preview)

Resource group (change) MyLabModule1

Status Running

Location East US

Subscription (change) Pase para Azure: patrocinio

Subscription ID 0ee72f24-f5c8-4671-9924-573a66389975

Tags (change) [Click here to add tags](#)

Computer name MySQLVM

Operating system Windows

Size Standard D2s v3 (2 vcpus, 8 GB memory)

Public IP address 13.90.100.211

Virtual network/subnet MyLabModule1-vnet/default


DNS name [Configure](#)

Show data for last: 1 hour 6 hours 12 hours 1 day 7 days 30 days

5. Click on Download RDP File.

Connect to virtual machine

MySQLVM

 To improve security, enable just-in-time access on this VM. →

RDP

SSH

To connect to your virtual machine via RDP, select an IP address, optionally change the port number, and download the RDP file.


* IP address


Public IP address (13.90.100.211) ▼

* Port number

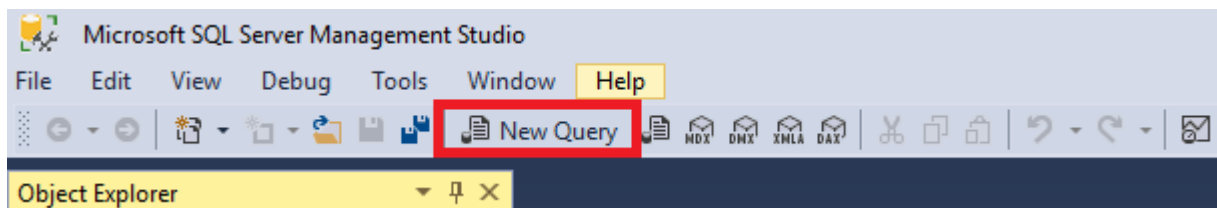
3389

Download RDP File

 Inbound traffic to the Public IP address may be blocked. You can update inbound port rules in the **VM Networking** page.

 You can troubleshoot VM connection issues by opening the **Diagnose and solve problems** page.

- Go to your downloads folder and double click on MySQLVM.rdp File, click on Connect, enter student as the user name and Pa55w.rd1234 as Password, and click on Accept. And then click on Yes.
- Click on Star and type Management, from the results click on SQL Management Studio 17, and then click connect.
- Click on New Query



- Type the following code and click on Execute

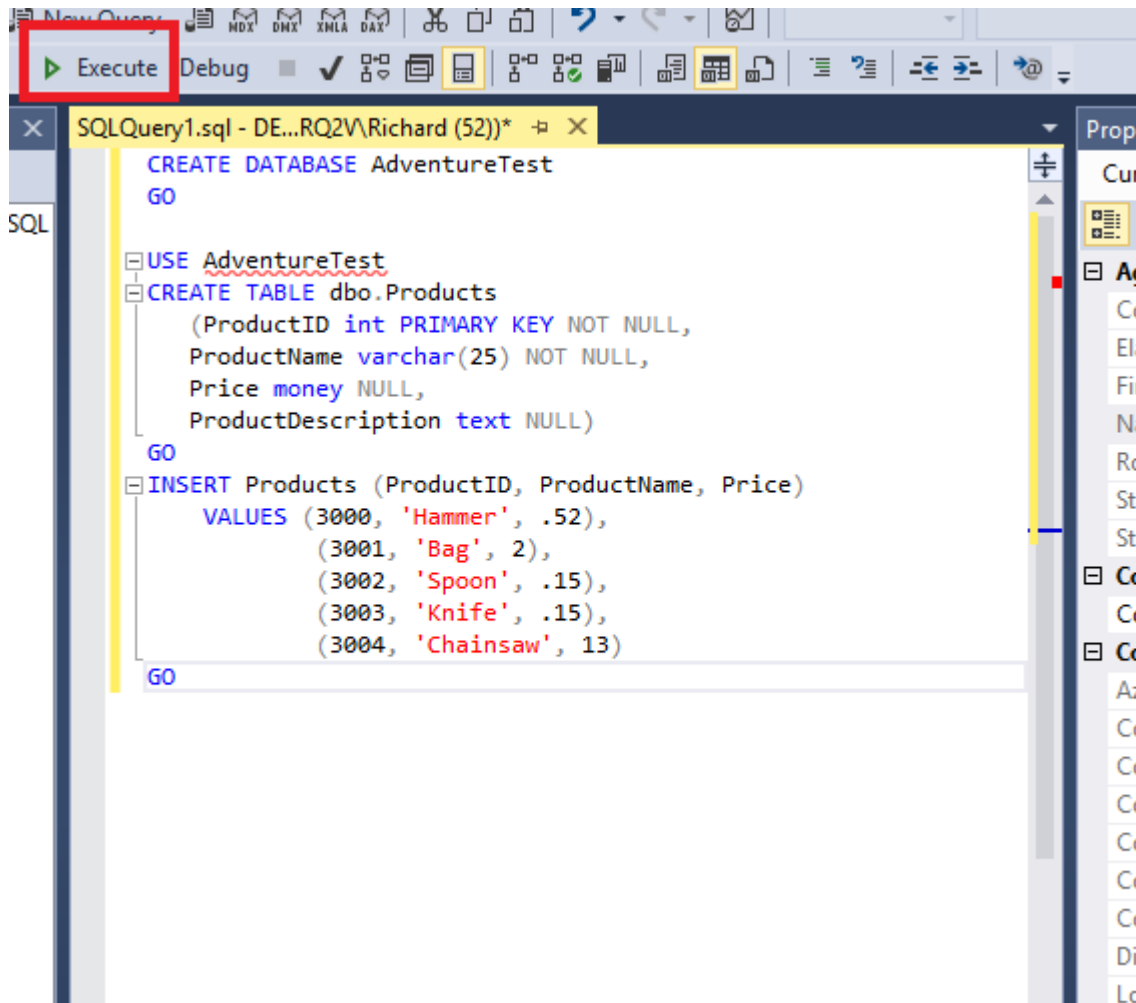
```
CREATE DATABASE AdventureTest
GO

USE AdventureTest
CREATE TABLE dbo.Products
(ProductID int PRIMARY KEY NOT NULL,
ProductName varchar(25) NOT NULL,
Price money NULL,
ProductDescription text NULL)
```

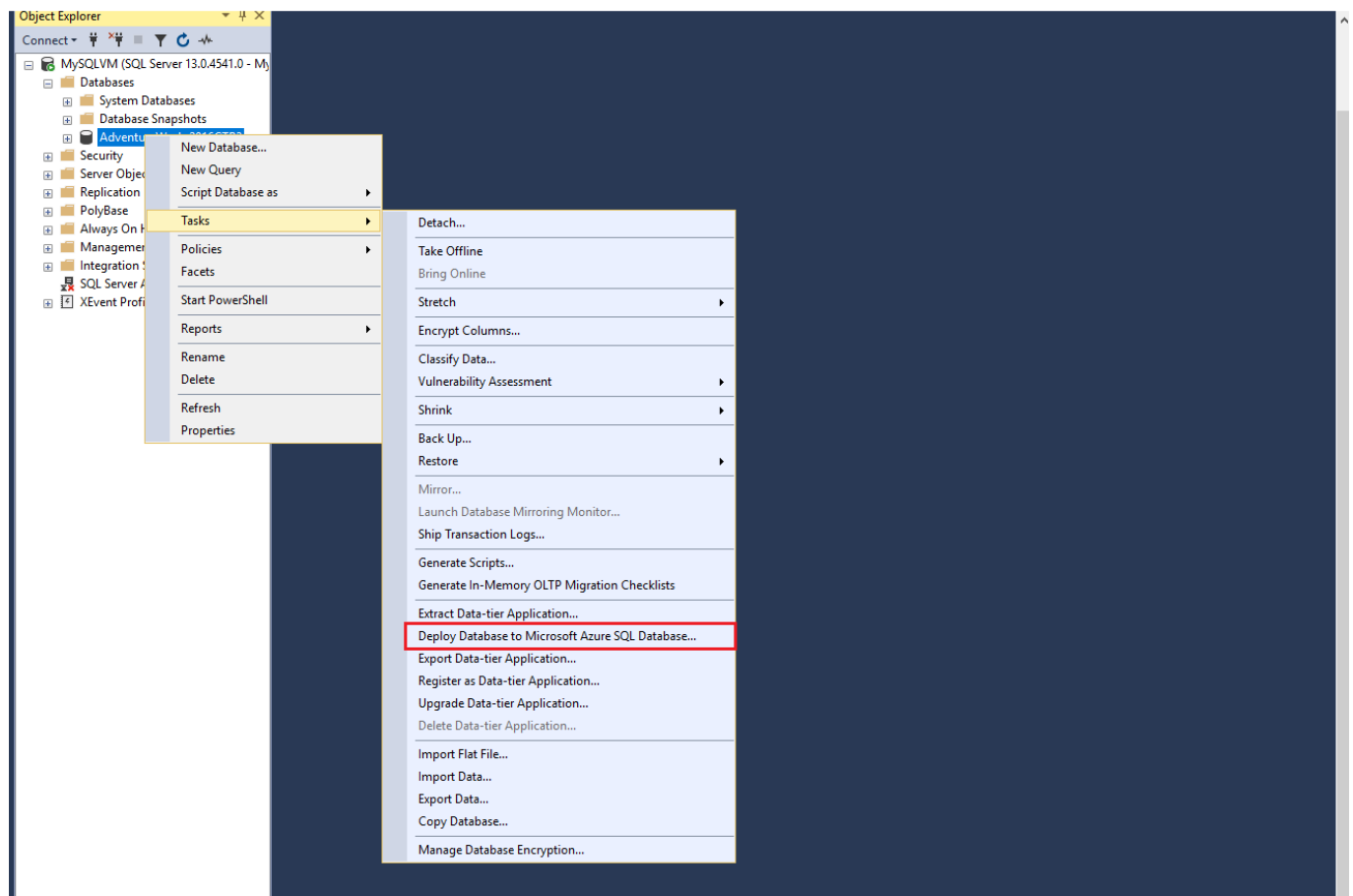


```
GO
INSERT Products (ProductID, ProductName, Price)
VALUES (3000, 'Hammer', .52),
       (3001, 'Bag', 2),
       (3002, 'Spoon', .15),
       (3003, 'Knife', .15),
       (3004, 'Chainsaw', 13)

GO
```



10. At object explorer, expand Databases and click on refresh until the AdventureTest Database appears
11. Right-click the AdventureTest database and select Tasks Deploy Database to Microsoft Azure SQL Database.



12. In the Deploy Database 'AdventureTest' dialog, select Next to begin.

13. On the Deployment Settings tab, select Connect next to Server Connection.

Deploy Database 'AdventureWorks2016CTP3'

Deployment Settings

Introduction
Deployment Settings
Summary
Results

Help

Specify Target Connection

Specify the name of the instance of SQL Server or the Microsoft Azure SQL Database server that will host the deployed database, name the new database, and then click Connect to login to the target server.

Server connection:

Connect...

New database name:

AdventureWorks2016CTP3

Microsoft Azure SQL Database settings

Edition of Microsoft Azure SQL Database:

Maximum database size (GB):

Service Objective:

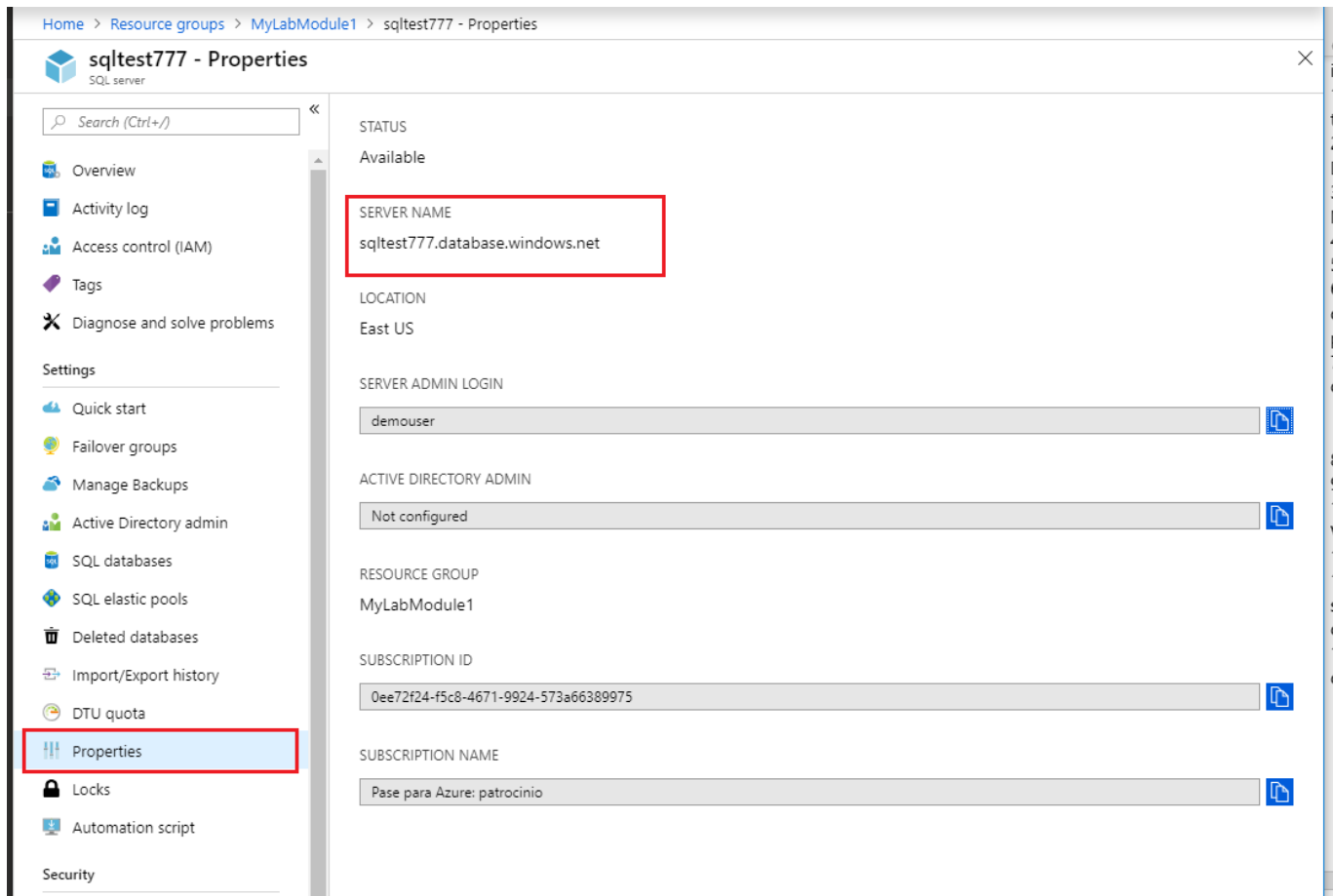
Other settings

Temporary file name:

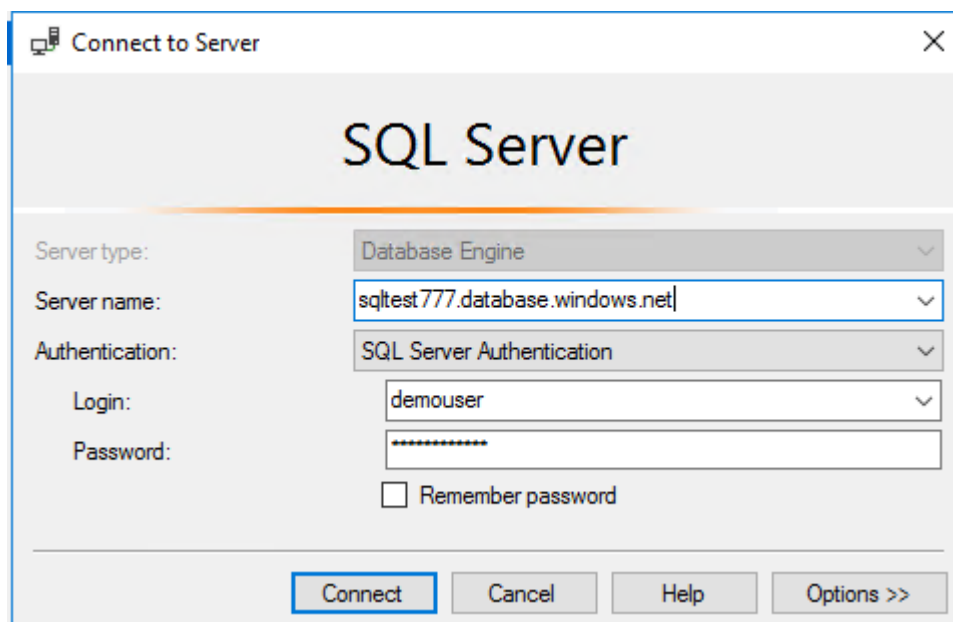
C:\Users\student\AppData\Local\Temp\2\AdventureWorks2016CTP3-20190214185926.ba **Browse...**

< Previous Next > Cancel

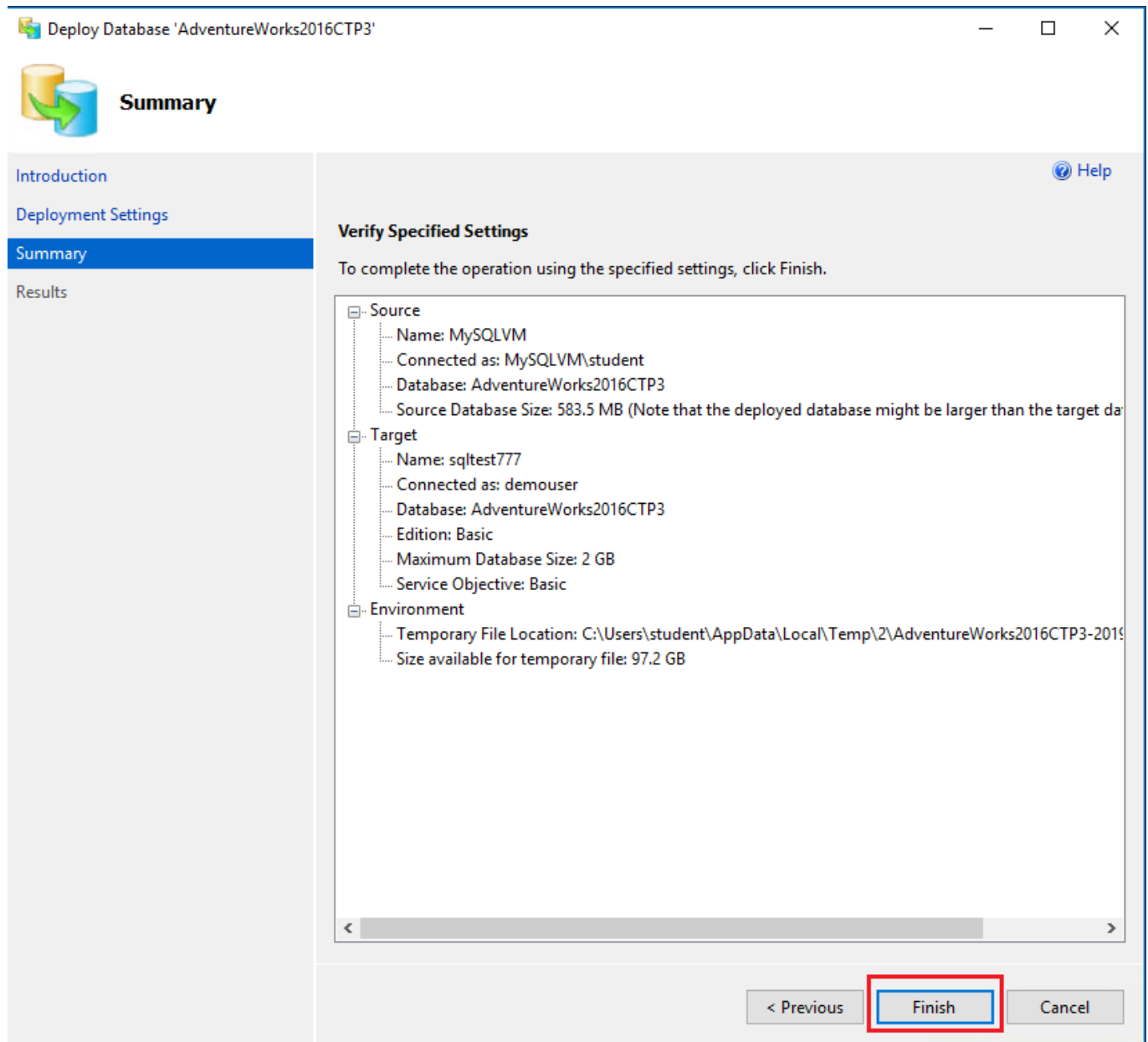
14. In the Connect to Server dialog, enter the server name of the Azure SQL server you created previously. You can find this by navigating to your SQL Server in the Azure portal and selecting Properties.



15. Next, set Authentication to SQL Server Authentication and enter the following credentials: a. Login: demouser b. Password: Password.1!!
16. Check Remember password.
17. Select Connect.



18. You should now see the Azure SQL server name in the Server connection box. Verify the new database name is AdventureTest, then, select Next.
19. Verify the settings are correct and select Finish.



20. When the operation has completed, close the database deployment dialog. You should see green checkmarks next to each completed step, along with a large checkmark next to Operation Complete.

21. You can verify that the database is operational, and its tables populated by connecting to it through SSMS, using the same credentials used in Step 15 above.

Exercise 2: Provision App Services

Task 1: Create a Web App

In this task, you will provision a Web App and API App in Azure.

1. In the Azure portal <http://portal.azure.com>, create a new Web App by selecting +Create a resource, enter "web app" in the Marketplace search box, and selecting the Web App item in the results.








Home > New > Marketplace > Everything

Everything

web app

Pricing: All Operating System: All Publisher: All

Results

NAME	PUBLISHER	CATEGORY
 Web App	Microsoft	
 Web App Bot	Microsoft	
 Web App + SQL	Microsoft	Web
 HTML5 Empty Web App	Microsoft	Web
 ASP.NET Empty Web App	Microsoft	Web
 Express Web App	Microsoft	Web
 Web App + PostgreSQL	Microsoft	Web

2. Select Create on the Web App blade.

3. On the Web App Create blade, specify the following configuration:

- a. App name: Enter a unique and valid URL, such as myfirstappXXX Where you must change the values for XXX (until the green check mark appears) in the App Name field.
- b. Subscription: Select the subscription you are using for this lab.
- c. Resource group: Select Use existing and select the resource group provided for this Module 1 lab.

Microsoft Azure Search resources, services, and docs

Home > New > Marketplace > Everything > Web App > Web App

Web App

Create

* App name
myfirstapp777 ✓
.azurewebsites.net

* Subscription
Pase para Azure: patrocinio

* Resource Group ⓘ
☐ Create new ☒ Use existing
MyLabModule1

* OS
☒ Windows ☐ Linux

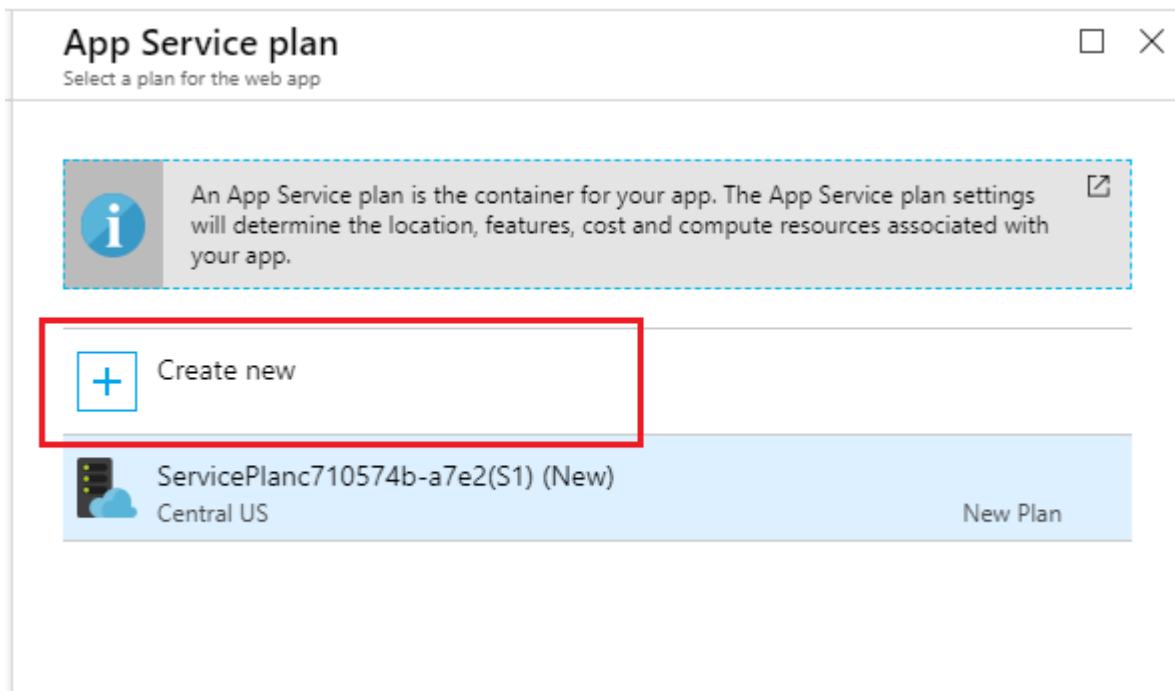
* Publish
☒ Code ☐ Docker Image

* App Service plan/Location
ServicePlanc710574b-a7e2(Centr... >

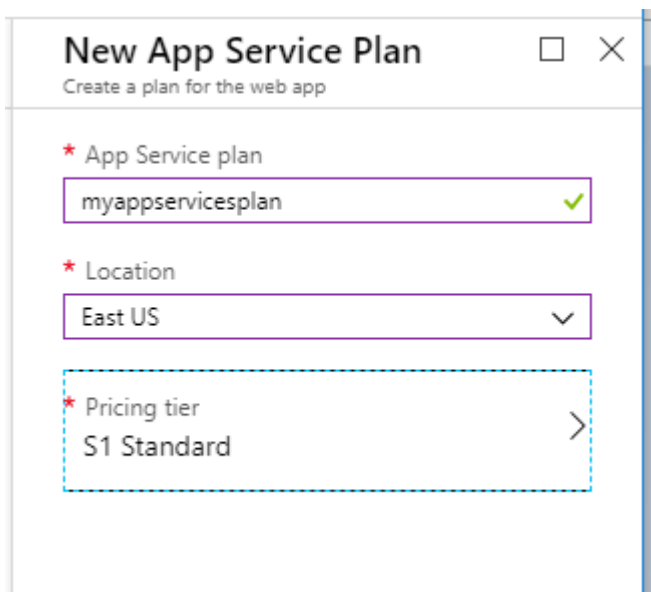
Application Insights
Disabled >

Create Automation options

- d. Select App Service plan/Location.
- e. On the App Service plan blade, select Create new.





- f. On the New App Service Plan blade, enter the following:
- App Service plan: Enter a unique name.




- Location: Select the location you are using for this hands-on lab.
- Pricing tier: Select S1 Standard.

Home > New > Marketplace > Everything > Web App > Web App > App Service plan > New App Service Plan >

**Dev / Test**
For less demanding workloads

**Production**
For most production workloads

**Isolated**
Advanced networking and scale

Recommended pricing tiers

S1 100 total ACU 1.75 GB memory A-Series compute equivalent 1435.92 MXN/Month (Estimated)	P1V2 210 total ACU 3.5 GB memory Dv2-Series compute equivalent 2871.84 MXN/Month (Estimated)
P2V2 420 total ACU 7 GB memory Dv2-Series compute equivalent 5743.68 MXN/Month (Estimated)	P3V2 840 total ACU 14 GB memory Dv2-Series compute equivalent 11487.36 MXN/Month (Estimated)

[See additional options](#)

Included features

Every app hosted on this App Service plan will have access to these features:

Included hardware

Every instance of your App Service plan will include the following hardware configuration:

4. Select OK.
5. Select Create to provision the new Web App.

Task 2: Provision an API App

1. In the Azure portal <http://portal.azure.com>, select +Create a resource, enter "api app" in the Marketplace Search box, and select API App from the results.









Home > New > Marketplace > Everything

Everything

api app

Pricing: All Operating System: All Publisher: All

Results

NAME	PUBLISHER	CATEGORY
 API App	Microsoft	Web
 Fusio open source API	tunnelbiz.com	Compute
 Web App	Microsoft	
 Web App Bot	Microsoft	
 Appcelerator Arrow API Builder	Appcelerator	Compute
 Unraveldata APM	Unravel Data	Compute
 Bing Maps API for Enterprise	Bing Maps	Developer Tools
 Web App + SQL	Microsoft	Web

2. Select Create on the API App blade.

3. On the API App Create blade, enter the following:

- a. App name: Enter a unique name, such as mynewapiXXX. Where you must change the values for XXX, (ensure the green checkmark appears).
- b. Subscription: Select the subscription you are using for this hands-on lab.
- c. Resource group: Choose Use existing and select the resource group provided for this Module 1 lab.
- d. App Service plan/Location: Select the plan you created for the Web App.

The screenshot shows the Azure Portal interface for creating a new API App. The left sidebar contains the navigation menu with options like 'Create a resource', 'Home', 'Dashboard', 'All services', and 'FAVORITES'. The main pane displays the 'API App' creation wizard with the following fields:

- App name:** mynewapi777 (with a green checkmark and .azurewebsites.net domain)
- Subscription:** Pase para Azure: patrocinio
- Resource Group:** MyLabModule1 (with radio buttons for 'Create new' and 'Use existing')
- App Service plan/Location:** myappservicesplan(East US)
- Application Insights:** mynewapi777

4. Select Create.

Exercise 3: Connect your App with the Azure SQL Database

Task 1: Get the connection String

1. On the azure portal, from the left menu, click on SQL databases
2. Select the AdventureTest Database you just migrated.
3. From the AventureTest blade, click on Connection strings

Home > [SQL databases](#) > AdventureTest (sqltest777/AdventureTest)

AdventureTest (sqltest777/AdventureTest)

SQL database

Search (Ctrl+[/](#))

Copy Restore Export Set server firewall Delete

Resource group ([change](#)) [module1](#)

Server name [sqltest777.database.windows](#)

Status Online

Elastic pool [No elastic pool](#)

Location East US

Connection strings [Show database connection](#)

Subscription ([change](#)) [Pase para Azure: patrocinio](#)

Pricing tier [Basic](#)

Subscription ID [ff568b9a-9356-43fa-ac3b-4d7e17379ef8](#)

Oldest restore point [2019-03-07 01:10 UTC](#)

Tags ([change](#)) [Click here to add tags](#)

Resource utilization (AdventureTest)

1 hour 24 hours 7 days View: Max

100% 90% 80% 70% 60% 50% 40% 30% 20% 10%

4. Select the ADO.NET connections string and click on the copy button, note that you will need to change the information with your username and password

AdventureTest (sqltest777/AdventureTest) - Connection strings

ADO.NET JDBC ODBC PHP

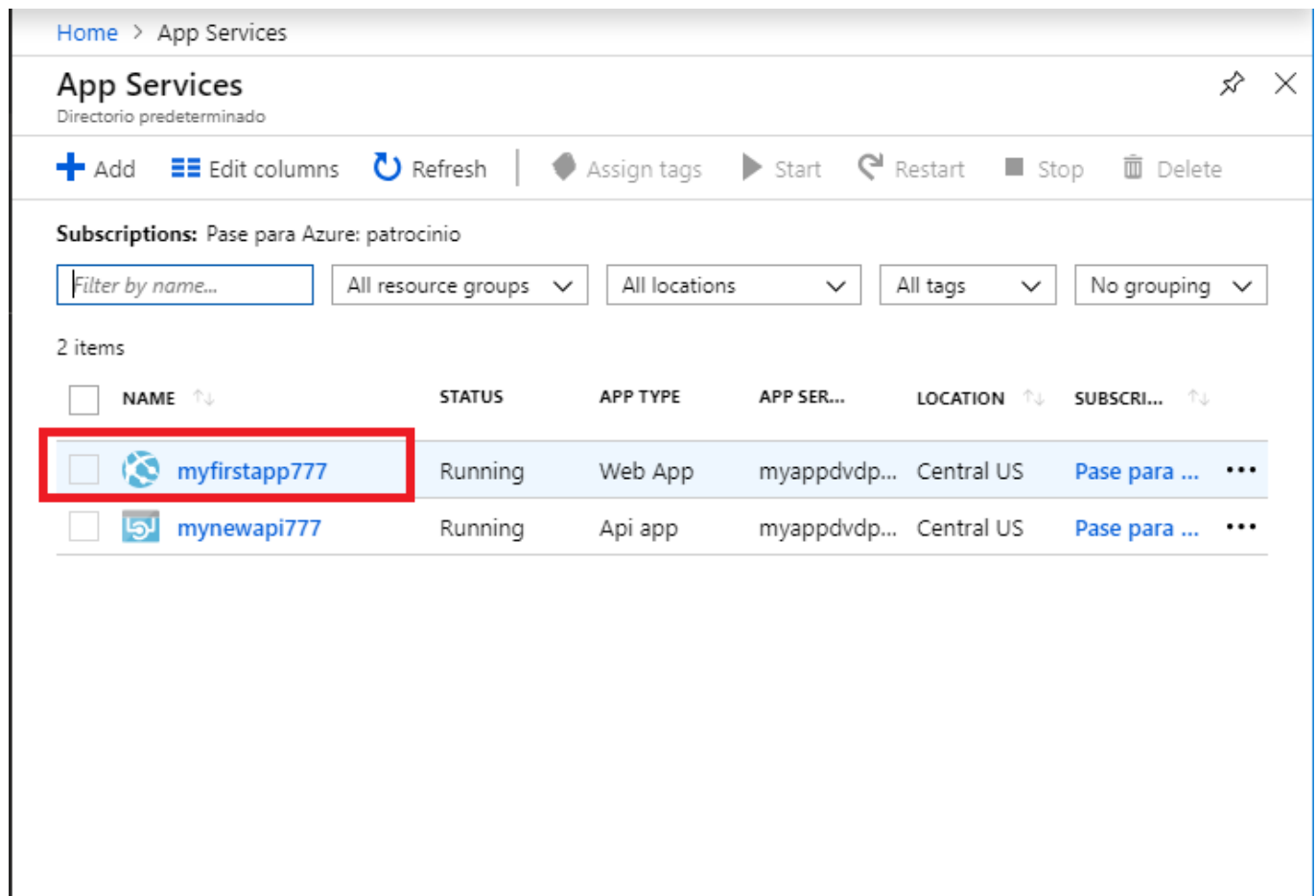
ADO.NET (SQL authentication)

Server=tcp:sqltest777.database.windows.net,1433;Initial Catalog=AdventureTest;Persist Security Info=False;User ID=(your_username);Password=(your_password);MultipleActiveResultSets=False;Encrypt=True;TrustServerCertificate=False;Connection Timeout=30;

[Download ADO.NET driver for SQL server](#)

Task 2: Add the connection string to your Web App

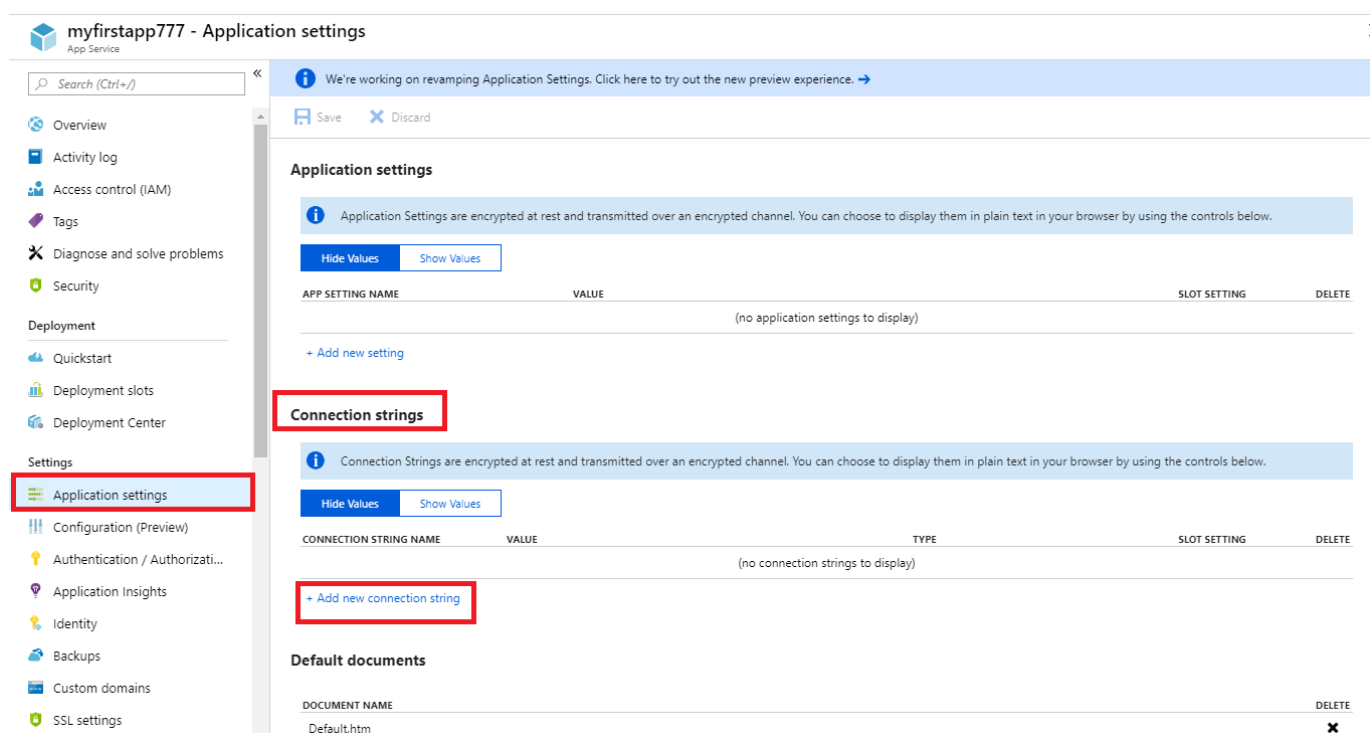
1.- On the Azure Portal from the left menu, click on App Services, and then click on the App you just created on Exercise 2



The screenshot shows the Azure App Services overview page. The 'myfirstapp777' Web App is highlighted with a red box. The table below shows the details of the apps:

NAME	STATUS	APP TYPE	APP SER...	LOCATION	SUBSCRI...
myfirstapp777	Running	Web App	myappdvdp...	Central US	Pase para ...
mynewapi777	Running	Api app	myappdvdp...	Central US	Pase para ...

2.- On the Web App blade, under settings click on Application Settings, scroll down to find the connections strings section and click on +Add new connection string



The screenshot shows the 'myfirstapp777 - Application settings' page. The 'Connection strings' section is highlighted with a red box, and the '+ Add new connection string' button is also highlighted with a red box. The table below shows the details of the connection strings:

CONNECTION STRING NAME	VALUE	TYPE	SLOT SETTING	DELETE
(no connection strings to display)				

3.- On Connection String Name Type democs, on Value paste the connection string that you obtained on the past task, change the values from username and password with demouser and Password.1!!, Ensure that SQLAzure is selected on Type dropdown text, and the click on Save at the top of the workspace

We're working on revamping Application Settings. Click here to try out the new preview experience. →

Save **Discard**

Hide Values **Show Values**

APP SETTING NAME	VALUE	SLOT SETTING	DELETE
(no application settings to display)			

+ Add new setting

Connection strings

Connection Strings are encrypted at rest and transmitted over an encrypted channel. You can choose to display them in plain text in your browser by using the controls below.

Hide Values **Show Values**

CONNECTION STRING NAME	VALUE	TYPE	SLOT SETTING	DELETE
democs	D=demouser;Password=Password.1!!;MultipleActiveResultSets=False;Encry	SQLAzure	<input type="checkbox"/>	X

+ Add new connection string

4.- NOTE: You can name the connection strings to match with the connection strings you use on your code.

Exercise 4: Identity and security

Task 1: Protect your WebApp with Azure Identity.

1. In the Azure portal, navigate to your Web App you created on the Exercise 3 (Select, App Services in the left menu, and then your app). In the left navigation, select Authentication / Authorization

myfirstapp777
App Service

Search (Ctrl+ /)

Overview

- Activity log
- Access control (IAM)
- Tags
- Security (Preview)
- Diagnose and solve problems**

Deployment

- Quickstart
- Deployment credentials
- Deployment slots
- Deployment Center

Settings

- Application settings
- Configuration (Preview)
- Authentication / Authorizati...**
- Application Insights

Deploy to your new site

Resource group (change) : MyLabModule1 URL : https://myfirstapp777.azurew

Status : Running App Service Plan : myappservicesplan (Standard:

Location : East US FTP/deployment userna... : No FTP/deployment user set

Subscription (change) : Pase para Azure: patrocinio FTP hostname : ftp://waws-prod-blu-065.ftp.a

Subscription ID : 0ee72f24-f5c8-4671-9924-573a66389975 FTPS hostname : ftps://waws-prod-blu-065.ftp.a

Tags (change) : Click here to add tags

Diagnose and solve problems
Our self-service diagnostic and troubleshooting experience helps you identify and resolve issues with your web app.

Application Insights
Application Insights helps you detect and diagnose quality issues in your apps, and helps you understand what your users actually do with it.



App Service Advisor
App Service Advisor provides insights for app experience on the App Service platfo. Recommendations are sorted by freshness and impact to your app.

Http 5xx


Data In

Data Out

2. If Authentication / Authorization is not enabled, select On.

 Save  Discard






Authentication / Authorization

 Anonymous access is enabled on the App Service app. Users will not be prompted for login.

App Service Authentication

Action to take when request is not authenticated

Authentication Providers

 Azure Active Directory	Not Configured
 Facebook	Not Configured
 Google	Not Configured
 Twitter	Not Configured
 Microsoft	Not Configured

Advanced Settings

Token Store

ALLOWED EXTERNAL REDIRECT URLS


3. Under Action to take when request is not authenticated, select Log in with Azure Active Directory.
4. Under Authentication Providers, Select Azure Active Directory, and then select Express under Management Mode.


Home > App Services > myfirstapp777 - Authentication / Authorization > Azure Active Directory

Azure Active Directory Settings

Active Directory Authentication

These settings allow users to sign in with Azure Active Directory. Click here to learn more. [Learn more](#)

Management mode  Off **Express** Advanced

 Express mode allows user to create an AD Application or select an existing AD application in your current Active Directory.

Current Active Directory
Directorio predeterminado

Management mode Create New AD App Select Existing AD App

* Create App
myfirstapp777

Grant Common Data Services Permissions On **Off**

5. Select OK to register the App Service app in Azure Active Directory. This creates a new app registration.
6. Click Save.

You are now ready to use Azure Active Directory for authentication in your App Service app.

Task 2: Test the protection.

1. From the App Services Blade, click on Overview.
2. Under URL on the dashboard click on the link to test the Authentication you just Enabled.
3. Sign in with the azure account provided for this lab

Note that the web app you just created now is protected with Azure Active Directory Identity

End of the lab